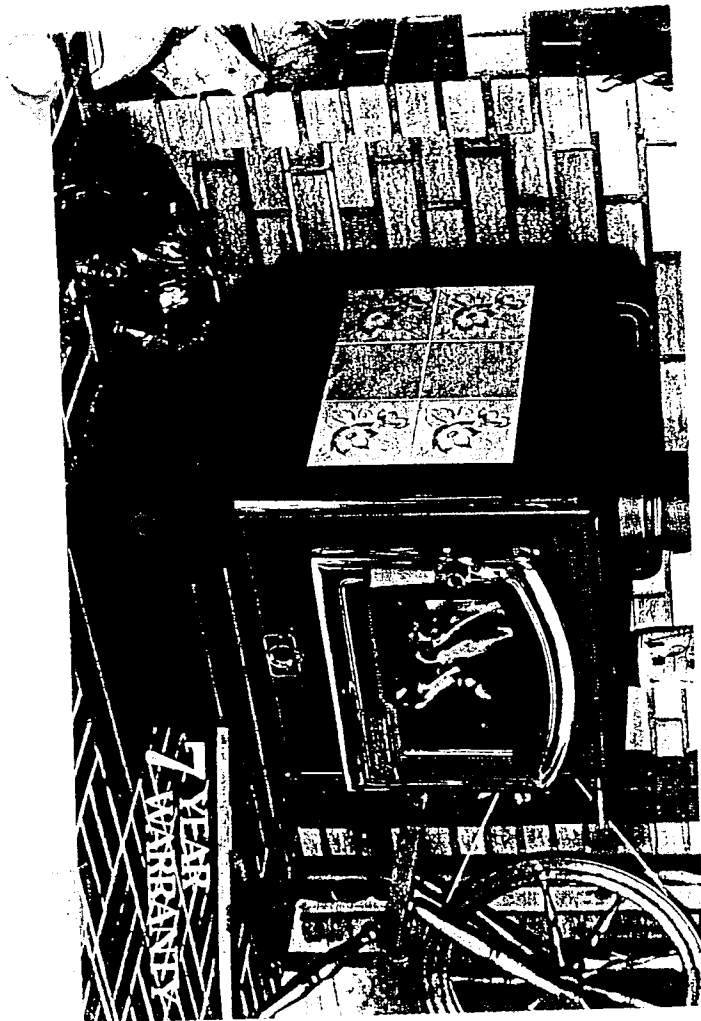


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ARDENT SPACE HEATER

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OWNER'S MANUAL



OPERATION  
MAINTENANCE  
INSTALLATION

A space heater for residential or mobile home use

**RSF ENERGY Ltd.**

Box 3637  
Smithers, BC V0J 2N0  
Canada

(604) 847-4301

KEEP THESE INSTRUCTIONS FOR FUTURE USE

DEAR CUSTOMER:

The ARDENT is the result of six years of research to give you the "state of the art" in wood burning technology. The ARDENT achieves a new level in efficiency and clean burn without the use of a catalyst.

You will find very precise heat control with your wall thermostat, together with a greatly reduced wood requirement.

It is in your best interest to become familiar with your new ARDENT. Study your manual carefully before attempting the installation. The manual should be kept in a safe place for future reference.

Operating your ARDENT is be simple. However, please follow the instructions in this manual carefully, as the operating techniques are somewhat different from other wood burning units.

We congratulate you on your choice of the R.S.F. ENERGY ARDENT and may your home fires keep burning!

Yours truly,

R.S.F. ENERGY Ltd.

*J.G. Guericke*  
J.G. Guericke, P. Eng.  
President

## SAFETY INSTRUCTIONS

### WARNING!

THESE OPERATOR SAFETY INSTRUCTIONS SHOULD BE READ CAREFULLY!

### DO NOT DESTROY

### PLEASE RETAIN FOR FUTURE REFERENCE

1. Fire door must be latched shut at all times when fire is burning. Open only to reload or check fire. DO NOT OVENWIND UNIT.
2. When reloading or checking fire, pull open the bypass first, then open door slowly and continue to pull bypass to the open position.
3. All combustible material, including firewood, must be a minimum of 460mm (18") from the unit.
4. Do not hang combustible material above unit.
5. Do not burn garbage or flammable fluids.
6. Burn wood only if your chimney is not approved for use with coal.
7. NEVER use gasoline, lantern fuel, kerosene, naphtha, engine oil, charcoal lighter fluid or similar liquids to start or freshen up a fire in this heater. Keep all such liquids well away from the heater at all times.
8. Do not elevate fire. Build fire directly on the integral hearth.
9. Route power cord behind unit to a power source away from heat.
10. Ensure that there is always enough fresh make-up air to the room where the unit is operating, or install a fresh air duct from outside to the combustion air inlet.
11. Do not build fire too close to the glass door.
12. Close door gently. If the glass cracks or breaks, it MUST be replaced before continuing to use unit (see instructions).

### CREOSOTE AND SOOT

Formation and need for removal

When wood is burned slowly, it produces tar and other organic vapours, which combine with expelled moisture to form creosote. The creosote vapors condense in the relatively cool chimney flue of a slow burning fire. As a result, creosote residue accumulates on the flue lining. When ignited, creosote makes an extremely hot fire.

The chimney connector and chimney should be inspected at least once every two months during the heating season to determine if a creosote buildup has occurred.

If creosote or coal soot has accumulated it should be removed to reduce the risk of a chimney fire.

### IN CASE OF CHIMNEY FIRE:

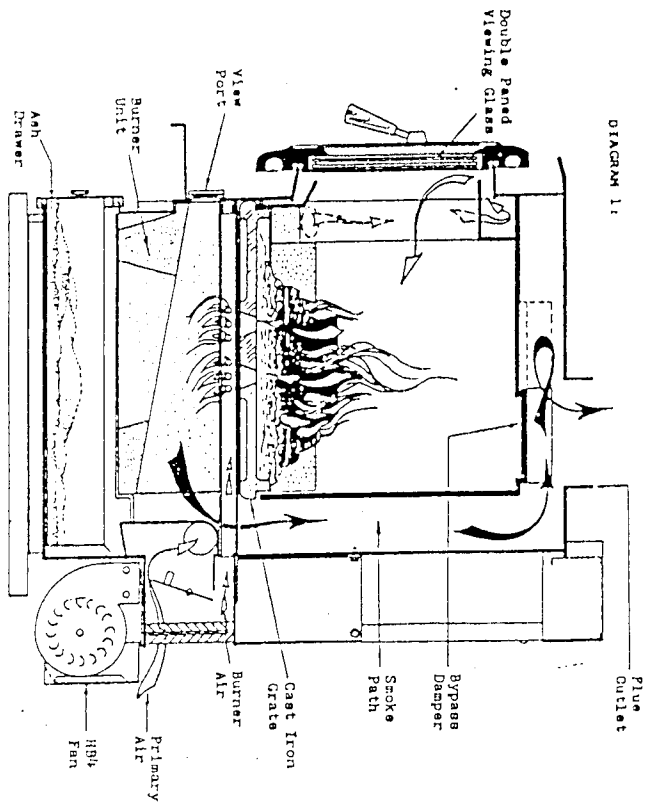
1. Close Combustion Air Inlet.
2. Call Fire Department.
3. Watch for overheating around chimney until it cools.
4. Inspect chimney after cooling.

### GENERAL SPECIFICATIONS

TYPE OF FUEL ..... - Wood, bituminous coal or charcoal  
COMBUSTION SYSTEM ..... - Downdraft with horizontal cone solid fuel gas burner  
TEMPERATURE CONTROL ... - electric wall thermostat with manual bimetallic override  
FIREBOX LINING ..... - Firebrick 32mm X 114mm X 229 std. (14" X 4 1/2" X 9" std.)  
BODY ..... - 3.5mm & 8mm (10 GA & 1/4") Steel  
DOOR ..... - Cast iron, double paned with ceramic glass, and sealed with fibreglas rope seal  
ASH REMOVAL ..... - Via sealed ash drawer as required  
OPTIONAL: ..... - MODEL H84 three speed fan

CERTIFIED FOR USE IN MOBILE HOMES.

DIAGRAM 1



RATING ..... 1,000-11,000 watt/hr (4,000-40,000 BTU/hr)

SIZE ..... Width: 570 mm (22½")  
Depth: 725 mm (28½")  
Height: 760 mm (30")

WEIGHT ..... 155 kg (340 lb)

FUEL CAPACITY . 55 litres (2 cu ft)

MAX. FUEL SIZE 200mm dia 400mm lg (8" dia x 16" lg)

FLUE OUTLET ... 152mm dia (6" dia)

# INSTALLATION

## LOCATION AND CLEARANCES

Locate unit as central as possible within the home or space to be heated. Do not locate near exitway. Do not connect space heater to any air distribution duct.

## MINIMUM CLEARANCE TO COMBUSTIBLE MATERIALS:

STANDARD HOME (with 24 ga single wall connector)

(Measured from heater)

Sidewall (A) 255mm (10in)  
Backwall (B) 255mm (10in)  
Corner (C) 150mm (6in)

(Measured from Connector)

Sidewall (D) 460mm (18in)  
Backwall (E) 460mm (18in)  
Corner (F) 460mm (18in)

MOBILE HOME (with double walled connector to unit)

(Measured from heater)

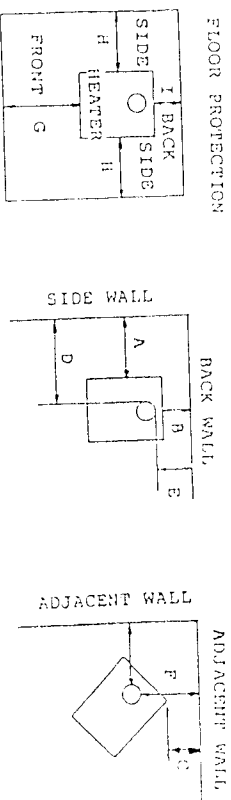
Sidewall (A) 255mm (10in)  
Backwall (B) 180mm (7in)  
Corner (C) 130mm (5in)

(Measured from Connector)

Sidewall (D) 460mm (18in)  
Backwall (E) 380mm (15in)  
Corner (F) 430mm (17in)

DIAGRAM 2

## FLOOR PROTECTION



Combustible floor must be protected by non-combustible material extending beneath the heater and to the front and sides as indicated: 6-460mm (18"); H-150 mm (6"); L-150 mm (6")

The space beneath the heater must not be obstructed.

Smoke detector must be located a minimum of 4.5M (15') away from heating unit to avoid accidental setting off of smoke detector.

Clearances may be reduced by means approved by the regulatory authority.

This unit is not to be connected to any air distribution duct.

If outside air is not installed on unit, provide a combustion air supply from the outside by means of a duct, of at least 0.018 square metres, 28 square inches, internal sectional area terminating at or near the unit.

#### CONNECTION TO CHIMNEY

This unit must be connected to the chimney using a minimum of elbows and horizontal pipe. All horizontal pipe must slope toward heater and be installed with seam up. Unit flue opening is designed for the connector to go into the opening.

All connections must be such that any condensation in the flue runs back into the unit and not onto the floor. Ensure that any single wall connecting pipe is spaced at least 460mm (18") from unprotected combustible material. Do not pass a chimney connector through a floor, ceiling, wall, partition or any concealed space.

CAUTION: UNDER NO CIRCUMSTANCES MUST ANY TYPE OF DAMPER OR RESTRICTION BE INSTALLED IN THE CHIMNEY OR CONNECTING STOVE PIPE.

#### CHIMNEY

Chimney size: - 150mm (6") dia.; or 150mm x 150mm (6" x 6") inside measure masonry chimney.

Metal chimneys must be suitable for wood burning appliances and masonry chimneys must be lined with an approved liner.

R.S.F. ENERGY heating units burn very efficiently, resulting in lower than usual flue gas temperatures. As a consequence, outside installation of the chimney is not recommended since certain weather conditions will cool the chimney below room temperature and cause a back draft and/or promote creosote formation.

If an existing chimney is to be used, it must be inspected carefully for soundness. Be sure the above specifications are met. IN U.S.A. ONLY: DO NOT CONNECT SPACE HEATER TO CHIMNEY FLUE SERVING ANOTHER APPLIANCE.

NOTE: On initial operation of the heating unit the draft should be measured. Draft should be .06" W.C. If the draft is over .1" W.C. a draft regulator should be fitted to the connector pipe. If the draft is less than .05" W.C., the chimney may be too short or may be leaky. Make the necessary alterations to get adequate draft. A draft reading should be taken with the unit at normal operating temperature. If draft has to be induced by a roaring fire it is inadequate. Normally the minimum height for the chimney is 12 feet.

#### CHIMNEY TERMINATION

Chimneys are required to extend at least 915mm (3') above the highest point where they pass through the roof of the building and at least 610mm (2') higher than any portion within ten feet. In some cases the chimney must be higher than minimum for enough draft due to unfavourable geometry of the surroundings.

#### EXTERNAL COMBUSTION AIR INSTALLATION (Requirement for mobile or air tight homes)

The process of combustion requires air. In mobile homes and air tight homes there may be insufficient air infiltration to meet the heating unit's demand.

FOLLOW THESE INSTALLATION INSTRUCTIONS CAREFULLY:

NOTE: ONLY PARTS OF A TYPE MODEL AND SIZE RECOMMENDED BY THE MANUFACTURER SHOULD BE USED IN INSTALLING THE HEATING UNIT.

1. Make sure the R.S.F. ENERGY heating unit's proposed location complies with all clearances as specified in diagram 2.
2. Ensure there are no obstructions where chimney AND air inlet hole is to be located. (Joists, ducting, pipes, electrical cable etc.).
3. Put floor shield in place.
4. Cut the required air inlet hole with a 133 mm (5 1/4") diameter hole saw through floor.
5. Position the heater on floor shield over hole. Fasten air inlet pipe to elbow with silicone sealant. Caulk space in floor around pipe to make an air tight seal. If basement or crawlspace is sealed, the air inlet pipe must be ducted outside as per diagram 3 and must be high enough to clear all snow accumulations.

6. Determine the flue location on ceiling using a plumb bob. Cut hole in ceiling and roof. Install ceiling joist shield assembly and fasten using 12-63mm (2 1/2") nails or screws. Install roof support etc. per manufacturers' instructions.
7. Fasten heater to floor through floor shield using holes in base with the lag screws from shipping pallet.
8. Install chimney to roof support as per diagram 3.
9. Install interior connector, making airtight fit to stove and chimney.
10. Ensure that the minimum clearance between the roofing material and the chimney, as recommended by the chimney manufacturer, is maintained.
11. Ensure that the trim collar fits well, so as to maintain an effective vapour barrier at the ceiling level.

#### CHIMNEY PART NUMBERS:

Choose one of the following systems (see diagram 3)

#### IN CANADA or USA:

CHIMNEY PARTS		=====	
	: PRO-JET/		: SECURITY
	: RYDER		:
Spark arrester (A)	: GRCSA (Pro-Jet)		: 6XCPE
	:		:
Roof flashing & (B)	: GRFO & SC (Pro-Jet)		: 6XF
Storm collar	:		:
Interior chimney (C)	: EV6ADJ / EV636		: 6DL42A
	: (Ryder)		:
Exterior chimney (D)	: 6" HT3000 (Pro-Jet)		: S2100 6XL &
	: 6SL		: Ext. 6XP
Roof support &			: 6XST, 6XSF &
Radiation shield (E)			: 6XRST
Air inlet (F)	: 5" dia elbow & pipe: 5" dia elbow & pipe		: (OAK1)
	:		:

NOTE: THE STRUCTURAL INTEGRITY OF THE MOBILE HOME FLOOR, WALL AND CEILING/ROOF MUST BE MAINTAINED.

DIAGRAM 3:

#### MOBILE HOME INSTALLATION

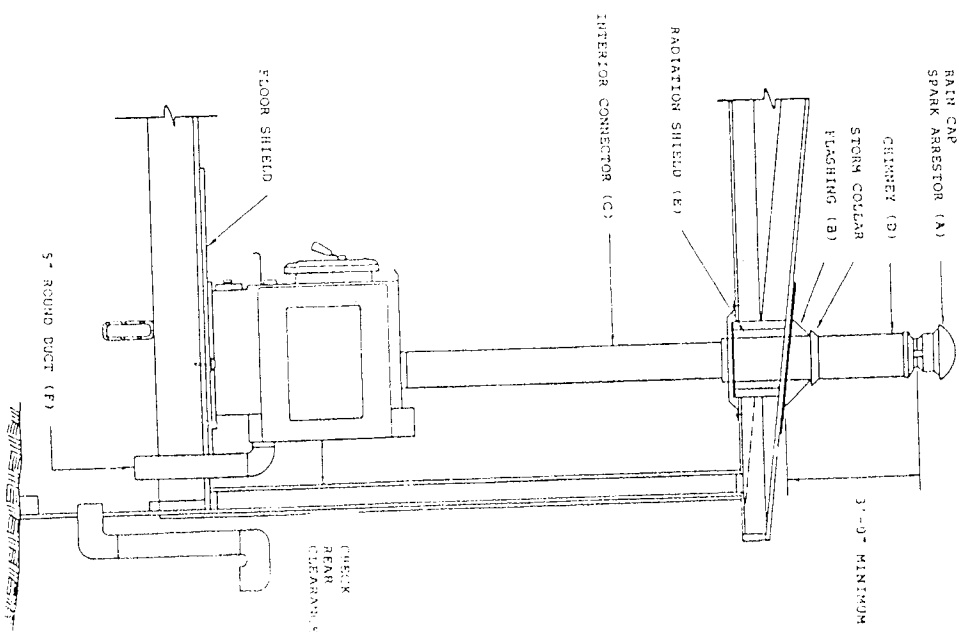
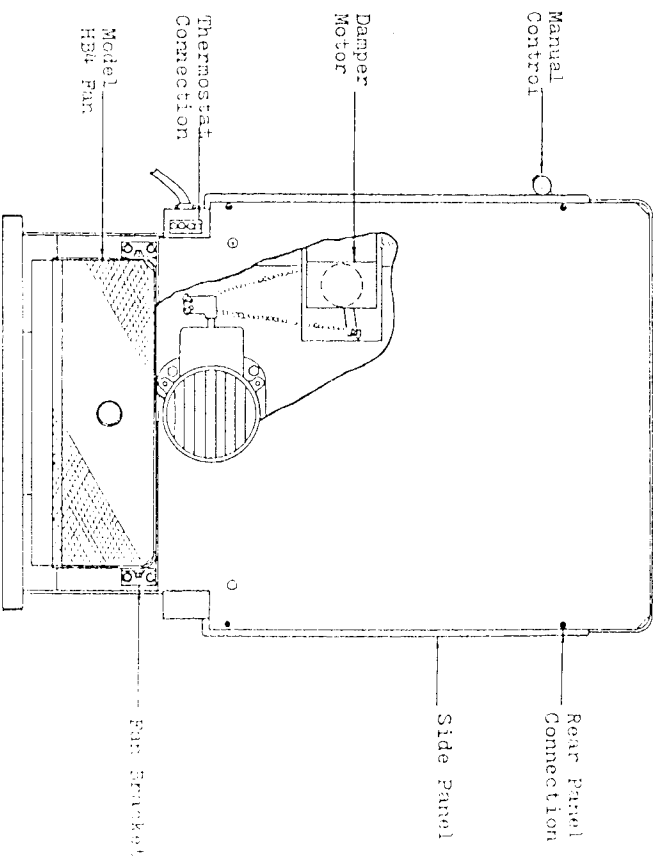


DIAGRAM 4



IN USA ONLY:

CHIMNEY PARTS

: DURAVENT : SECURITY  
: #6DCMR Kit :

Spark arrester (A)

: #5078 : 6CPE

Roof flashing & storm collar (B)

: #5049 & #5059 : 6FA

Interior chimney (C)

: 6DVL, 2-#1624, 1-#1670 : 6DL36

Exterior chimney (D)

: #5000 series : Mod. ASHT (6L) & Ext. 6P

Roof support & radiation shield (E)

: #5048A : 6ST, 6SF & 6RSM

Air inlet (F)

: 5" dia elbow & pipe: 5" dia elbow & pipe : (OAKI)

WALL THERMOSTAT

The control system consists of an electric damper control unit and a wall thermostat.

1. Locate thermostat some distance from heater 3M - 6M (10' - 20') but not in another room unless direct venting is provided for hot air.
2. The thermostat should be set on an interior wall. Follow manufacturers instructions.
3. The heat anticipator setting should be 0.4 amps.

FAN OPTION (Model HB4)

The optional three speed fan is controlled by an automatic thermal disc switch. The fan only turns on when the ARDENT is hot, and automatically shuts off when it cools.

The fan mounts at the bottom of the rear heat shield below the air inlet (see diagram 4). This option increases air flow up the back and over the top of the heater.

## OPERATION INSTRUCTIONS

R.S.F. ENERGY units are especially designed for controllability. With the optional thermostat kit, your house will be heated to within 1 degree Celsius of your thermostat setting.

The following operating instruction MUST BE FOLLOWED CAREFULLY for satisfactory operation.

### FUEL:

Do not burn any fuel but wood or coal.

Do not burn driftwood. Salt corrosion is not covered under warranty.

Wood should be dry. It should be noted when using green wood:

1. The amount of wood that you need is increased by approximately 20% when using green compared to dry wood.
2. The wood has to be in smaller pieces.
3. More frequent fueling is necessary.
4. Creosote formation may increase.
5. The fire has to be started with dry wood until a good bed of coals is formed.
6. Heat output will be considerably lower.
7. Do not use grate or elevate fire.

### BYPASS DAMPER

This unit is equipped with a safety interlock and can be operated in either of two modes with door closed.

1. Bypass damper slightly open.
  2. Bypass damper closed.
- Use mode 1 when burning green wood or starting up fire.  
Use mode 2 for maximum efficiency and minimum pollution.

## BYPASS OPERATION

1. When the bypass damper is open (Mode 'a') combustion will take place within the entire firebox. Operate the heating unit with bypass pulled out when quick heat is required.
2. When desired house temperature has been achieved, push bypass in.
3. Whenever there is a fire burning, the bypass should be open for 30 seconds before the door is slowly opened.
4. When starting a fire the bypass should be open to vent away smoke.
5. Fire door must be latched shut at all times except for loading fuel or checking fire

### LIGHTING

After lighting, leave the door open a crack for a few minutes for the wood to catch then latch door shut. Leave bypass slightly open (Mode 'a') for 30 minutes to allow chimney and refractory burner to reach operating temperature. Do not use a grate or elevated fire, build wood fire directly on hearth.

### WALL THERMOSTAT CONTROL

Set the thermostat at temperature desired. When warming up a cold room there will be an initial temperature overrun, then the temperature will stabilize.

### MANUAL CONTROL (in case of power failure)

Pull the chain all the way out until unit warms up, then adjust for desired temperature.

### RELOADING

1. Have fuel on hand to load firebox.
2. Open bypass for 30 seconds.
3. Open the door SLOWLY simultaneously pulling bypass.
4. Load fuel with logs lengthwise, front to back.
5. Close door and push bypass in.

NOTE: Do not overfire unit by leaving door open except to light and to check fire. Operation with door ajar voids warranty.

#### DAILY

Check chimney and pipe for creosote build-up until experience shows how often cleaning is necessary. Once a week, run unit at maximum with bypass open for 30 minutes to bake any creosote in the chimney and pipes. This should greatly reduce frequency of cleaning.

#### AS NEEDED

Any creosote buildup in chimney and pipe over 6mm (1/4") should be removed mechanically. OPEN BYPASS BEFORE CLEANING CHIMNEY.

#### CLEANOUT

The glass view port doubles as a cleanout door for cleaning the secondary chamber. Clean when necessary with the tool provided.

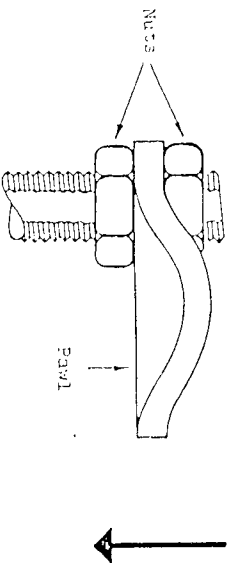
#### ASH DRAWER

Ashes should be removed before the ash drawer is full. The ash container should be placed outside on a non-combustible surface, or on the ground, well away from all combustible materials, pending final disposal. Other wastes should not be placed in this container. If the ashes are disposed of by burial in soil or otherwise locally dispersed, they should be retained in the closed container until all the cinders have thoroughly cooled. When replacing the ash drawer make sure there are no spilled ashes in the drawer cavity. Retaining screws should be tightened evenly to ensure drawer seals properly.

#### DOOR

When closing the door there should be a slight resistance; if not, the door closer should be adjusted. To tighten closer, loosen bottom nut and tighten top nut. Lubricate door pawl with high temperature lubricant monthly.

DIAGRAM 5



#### DRAFT CONTROL

Check that it opens and closes freely.

Periodically check the glass rope door seal for condition and tightness of door fit. Replace door seal, if it shows signs of leakage.

#### PAINT CURING PROCEDURE (IMPORTANT)

Before regular use, the finish on your ARBENT must be cured as follows:

1. Make the first two fires small, low temperature fires. Allow unit to cool between fires.
2. Next start the fire and slowly heat your ARBENT to maximum temperature and keep a good fire for two hours.

#### NOTE:

During the curing procedure the surfaces must NOT be touched. The paint becomes quite soft when it cures. The paint will smoke for 1/2 to 1 hour. This is a normal part of the curing process.

#### YOUR GLASS DOOR

##### CARE OF GLASS:

Under normal use, the unique double glass door system should stay clean for extended periods. Use of wet wood or a very low dirt rate will cause condensation on the glass. A good hot fire will usually clean this. Otherwise a razor blade scraper (not to be used with a NON ABRASIVE cleaner will do the job. do not clean with cleaner while hot.

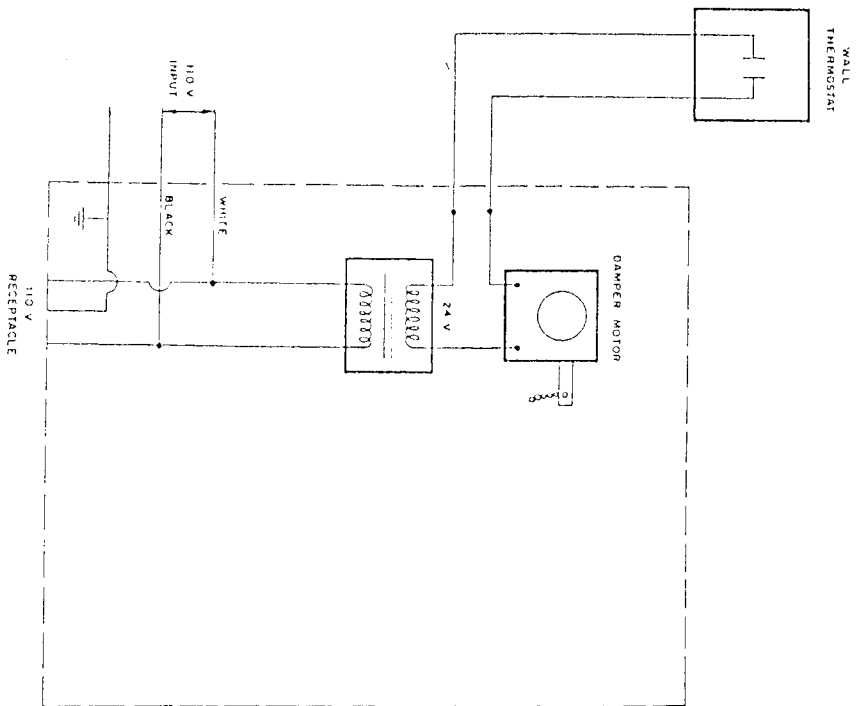
Check that screws holding glass retainer remain tight.

##### SHOULD YOUR GLASS BREAK:

2. Remove all broken parts by unscrewing retainer and gently lifting out gasketing.
3. Replace with 5mm thick "neoceram" ceramic glass 229mm x 330mm (9" x 13"); use of any other brand or size of glass may be dangerous. The gasketing must be in perfect condition, otherwise it should be replaced with OCL # 304 glass seal; any other kind may cause breakage or leakage. Ensure BOTH panes fit well on top of each other.
4. Remount glass retainer using ALL screws. Replace any lost or broken ones.

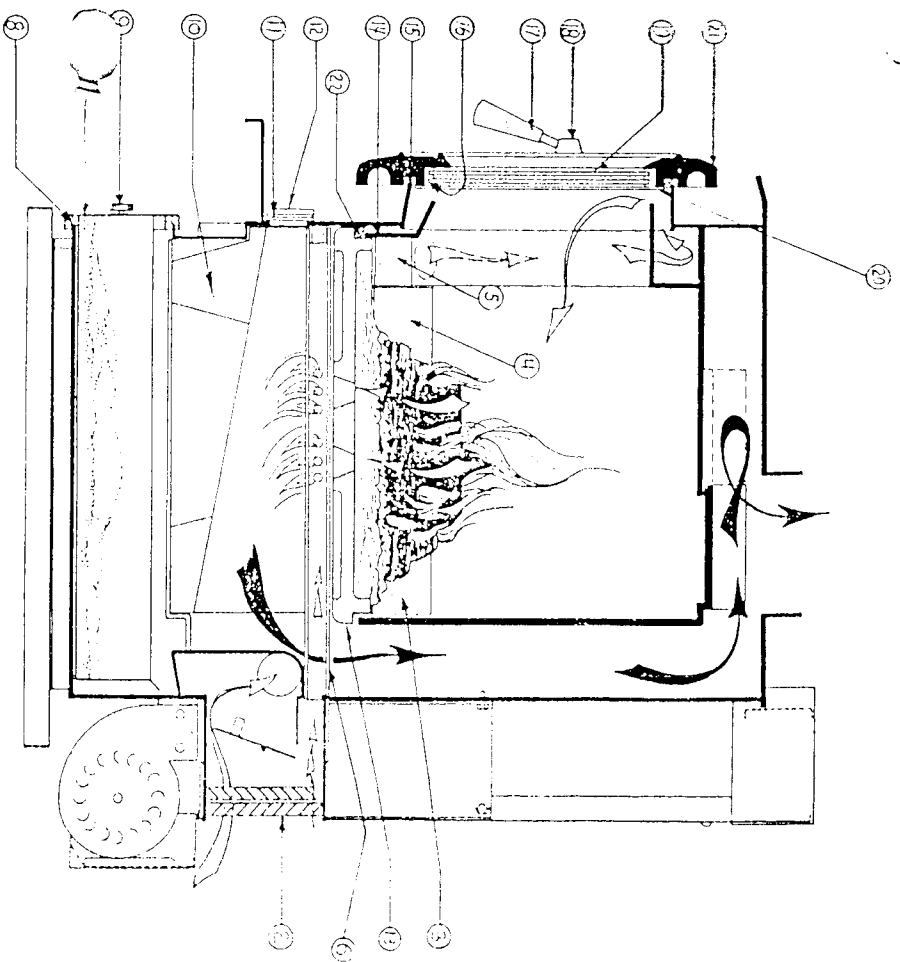


DIAGRAM 6



WIRING DIAGRAM

DIAGRAM 7



REPLACEMENT PARTS